

JPRS 69185

2 June 1977

CHINA

PEOPLE'S REPUBLIC OF CHINA SCIENTIFIC ABSTRACTS  
No. 168

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ACTA CHIMICA SINICA

AUTHOR: None

ORG: The Nitrogen-Fixation Research Group, Laboratory of Catalysis, Chemistry Department, Amoy University

TITLE: "A Model of Nitrogenase Active-Center and Mechanism of Nitrogenase Catalysis"

SOURCE: Shanghai HUA-HSUEH HSUEH-PAO [ACTA CHIMICA SINICA] in Chinese Vol 34 No 1, Feb 76 pp 1-16

TEXT OF ENGLISH ABSTRACT: Based upon the known reactions of nitrogenase and the principles of coordination catalysis, a model of nitrogenase active-center is proposed. An octa-atomic cluster,  $\text{Fe}_2\text{S}_2\text{-Mo}_2\text{O}_2$ , of pseudo-cubane-type structure is supported to form a coupled twin of trinuclear ( $2\text{Mo-1Fe}$ ) active-centers, which also catalyze the reduction of  $\text{H}^+$  to  $\text{H}_2$ . With this model, mechanisms of all the known nitrogenase-catalyzed reactions are explained, together with the non-inhibition of the hydrogen-evolution reaction by  $\text{CO}$ , and the mixed character of inhibition of other nitrogenase-catalyzed reactions. Electron transport by 2-stepped ATP-driving with some electron back-flow is shown to give satisfactory explanations for the observed  $\text{ATP}/2\text{e}^-$  ratio and for the reductant-independent ATP hydrolysis catalyzed by nitrogenase. The close analogy between electron

[continuation of HUA-HSUEH HSUEH-PAO Vol 34, No 1, Feb 76 pp 1-16]

transport by 2-stepped ATP-driving in nitrogenase catalysis and electron transport by 2-stepped photo-driving in photosynthesis by green plants is also illustrated.

Received 15 May 1975

AUTHOR: None

ORG: The Fluorocarbon Group, Shanghai Institute of Organic Chemistry, Academia Sinica

TITLE: "The Structures of the 1,2-Diphenylhexafluorocyclobutanes and Their Pyrolysis"

SOURCE: Shanghai HUA-HSUEH HSUEH-PAO [ACTA CHIMICA SINICA] in Chinese Vol 34, No 1, Feb 76 pp 17-30

TEXT OF ENGLISH ABSTRACT: The structures of the cyclodimerization products of  $\alpha, \beta, \beta$ -trifluorostyrene (TFS) have been investigated. The TFS cyclodimers are identical with the thermal cross-cycloadducts of tetrafluoroethylene and 1,2-difluorostilbene. Both components of TFS cyclodimers show difluorostilbene fragments ( $m/e 216$ ) in their mass spectra. Therefore, the structures of the cyclodimers are the 1,2-disubstituted cyclobutanes 1 and 2, i.e., products of the head-to-head cycloaddition.

Both trans-1,2-difluorostilbene and trans-stilbene can undergo thermal cycloaddition with tetrafluoroethylene, yielding 1,2-diphenylhexafluorocyclobutanes (cis: trans=2.3:97.7) and 1,2-diphenyl-3,3,4,4-tetrafluorocyclobutane (trans only) respectively. These cycloaddition reactions proceed with stereoselectivity. The pyrolytic reactions of the TFS cyclodimers have been studied

[continuation of HUA-HSUEH HSUEH-PAO Vol 34, No 1, Feb 76 pp 17-30]

by means of pyrolysis gas chromatography (PGC). Below 400°, the main reaction is the cis to trans isomerization. In the range of 400~600°, the symmetric cleavage of the cyclobutane ring predominates, yielding  $\alpha, \beta, \beta$ -trifluorostyrene quantitatively. At higher temperatures (>700°), unsymmetric cleavage also occurs.

Received 2 December 1974

AUTHOR: LI Shu-wen [2621 6615 2429]  
CHU Chen-yen [2612 3791 3601]\*

ORG: Shanghai Institute of Materia Medica

TITLE: "Tumor Chemotherapy--Synthesis of Compounds Related to Actinomycins 1,9-Di-[N-Alkylcarbamyl (or Alkoxy-Carbonyl)]-4, 6-Disubstituted-2-Amino-Phenoxazone-(3)"

SOURCE: Shanghai HUA-HSUEH HSUEH-PAO [ACTA CHIMICA SINICA] in Chinese Vol 34, No 1, Feb 76 pp 31-37

TEXT OF ENGLISH ABSTRACT: In an attempt to modify the solubility behavior of actinomycins so as to improve the usefulness of this antibiotic in the treatment of tumors, the authors prepared a series of 1,9-di[N-alkyl (medium and long chain) carbamyl (or alkoxy-carbonyl)]-4, 6-disubstituted-2-amino-phenoxazone-(3) (III, IV, V and VI), in which the hydrophobic groups were introduced in place of the polypeptide moiety of the molecules of actinomycins.

The starting material 2-nitro-3-acetoxy-4-methyl-benzoyl chloride (XII) was treated with appropriate alkyl amine followed by alkaline hydrolysis to give the 2-nitro-3-hydroxy-4-methyl benzoyl-alkylamine (XIV). The latter was subjected to catalytic reduction to give the corresponding aminophenol (XV),

[continuation of HUA-HSUEH HSUEH-PAO Vol 34, No 1, Feb 76 pp 31-37]

which was then oxidatively cyclized with the aid of p-benzoquinone to give the desired product (V).

The compounds (III) and (IV) could also be obtained from 2-nitro-3-benzyloxy-benzoyl chloride (VII) by subjecting to a similar reaction sequence.

The other route was to use 2-nitro-3-hydroxy-4-substituted-benzoic acids (XVI, XVII) as the starting material. The result also proved to be satisfactory.

The solubility behavior of these compounds had in fact been modified to some extent, according to preliminary in vitro test, only a few of them showed a moderate inhibition toward Hela cells but no action in vivo against S 180 and S 37.

\*Instructor, Department of Pharmacology, Peking Academy of Medical Sciences

Received 1 August 1975

AUTHOR: None

ORG: Department of Phytochemistry, Institute of Materia Medica, Chinese Academy of Medical Sciences, Institute of Medical Sciences, Chinghai

TITLE: "Chemical Studies on Anisodamine"

SOURCE: Shanghai HUA-HSUEH HSUEH-PAO [ACTA CHIMICA SINICA] in Chinese Vol 34, No 1, Feb 76 pp 39-44

TEXT OF ENGLISH ABSTRACT: Anisodamine (trade name "654") is an alkaloid isolated from the medicinal plant Anisodus tanguticus (Maxim) Pascher. On the basis of pharmacological and clinical studies, anisodamine as a new anti-cholinergic drug, may be used for the treatment of acute microcirculatory disturbances.

Based on chemical studies, anisodamine was identified as 6-hydroxyhyoscyamine and the stereoconfiguration of the hydroxy-group is 6 S. It is one of the major constituents in Anisodus tanguticus (Maxim) Pascher.

Received 4 August 1975

AUTHOR: CH'EN Yen-yung [7115 1693 6978]  
LI Lien-niang [7812 5571 1124]

ORG: Institute of Materia Medica, Chinese Academy of Medical Sciences, Peking

TITLE: "Studies on Fructus Schisandrae--Structure Determination of Wuweizi Ester A and Wuweizi Ester B"

SOURCE: Shanghai HUA-HSUEH HSUEH-PAO [Acta Chimica Sinica] in Chinese Vol 34, No 1, Feb 76 pp 45-52

TEXT OF ENGLISH ABSTRACT: The present paper reports the identification and the structure determination of Wuweizi ester A and Wuweizi ester B, which are isolated from the kernels of *Schisandra chinensis* Baill.

Received 10 November 1975.

AUTHOR: None

ORG: The Epoxide Group, Shanghai Institute of Organic Chemistry, Academia Sinica

TITLE: "Reactions of Water, Methanol, Alkali and Hydrogen Peroxide With Perfluoropropylene Epoxide and With Perfluoropropylene"

SOURCE: Shanghai HUA-HSUEH HSUEH-PAO [ACTA CHIMICA SINICA] in Chinese Vol 34, No 1, Feb 76 pp 53-58

TEXT OF ENGLISH ABSTRACT: Perfluoropropylene epoxide was partially converted to  $\alpha$ -methoxyperfluoropropionic acid in aqueous methanolic potassium hydroxide at  $-40^{\circ}$  to  $-30^{\circ}$ , while under the same condition, in the presence of hydrogen peroxide the epoxide was partially decomposed into trifluoroacetic acid. At  $-40^{\circ}$  to  $-30^{\circ}$ , the reaction of perfluoropropylene with aqueous methanolic potassium hydroxide yielded almost quantitatively 1,1,2,3,3,3-hexafluoropropyl methyl ether.

Received 13 December 1975.

AUTHOR: YAO K'o-min [1212 0344 2404]  
WANG Ping-yuan [3769 4426 3220]  
CHU I-ch'iang [2612 4135 1730]

ORG: Changchun Institute of Applied Chemistry, Academia Sinica

TITLE: "Mechanism of the Rare-Earth Diglycolate Complexes Formation"

SOURCE: Shanghai HUA-HSUEH HSUEH-PAO [ACTA CHIMICA SINICA] in Chinese Vol 34, No 1, Feb 76 pp 59-70

TEXT OF ENGLISH ABSTRACT: The equilibrium in the complex formation of some rare-earths with diglycolic acid has been investigated by the static ion-exchange method. It has been shown that under these conditions:

(where  $C_{Ln}$ =total concentration of rare-earth metal ions,  $C_{H_2A}$ =total concentration of the ligand diglycolic acid), complexes with compositions of 1:1, 1:2, 1:3 were formed. The values of formation constants calculated by the method of Fronaeus and also by that of Schubert agreed very well. From the number of hydrogen ions liberated during the formation of these rare-earth diglycolate complexes at various acidities, the mechanism of the complex formation could be suggested as follows:



[continuation of HUA-HSUEH HSUEH-PAO No 1, Feb 76 pp 59-70]

where  $\text{Ln}^{3+}$ =rare-earth metal ion,  $\text{HA}^-$ =anion of diglycolic acid,  $n$ =number of hydrogen ions liberated, thus the equilibrium constant is expressed as:

where  $n$  was found to be 1, 2 and 3.

The dissociation constant of diglycolic acid at the ionic strength =0.50 was also calculated with the aid of Davies' equation:

On the basis of the above suggested mechanism, the stability constants of these complexes were calculated from the acid dissociation constants of diglycolic acid and the equilibrium constants  $K_n$ . These separation factors ( $\alpha$ ) for rare-earth pairs were calculated from distribution coefficients  $K_d$  at various ligand concentrations. These data seem to be useful in the selective separation of these elements.

Received 9 January 1974

AUTHOR: None

ORG: The Prostaglandin Synthesis Group, Shanghai Institute of Organic Chemistry, Academia Sinica; The Ninth Pharmaceutical Works of Shanghai; Shanghai College of Chemical Engineering

TITLE: "A New Approach to Synthesis of dl-15-Methyl-Prostaglandin  $\text{F}_{2\alpha}$  and its 15(R,S)-15-Methyl Ether"

SOURCE: Shanghai HUA-HSUEH HSUEH-PAO ACTA CHIMICA SINICA in Chinese Vol 34, No 1, Feb 76 pp 73-78

TEXT OF ENGLISH ABSTRACT: Starting from cyclopentadiene, both dl-15-methyl-prostaglandin ( $\text{XV F}_{2\alpha}$  and its 15(R,S)-15-methyl ether ( $\text{X}_b$ ) have been synthesized via a ten-step process. The key reaction steps involved in this synthesis were the use of the 15-methyl-containing aluminum compound ( $\text{IV}_b$ ) as a reagent to prepare  $\text{VI}_b$  ( $\text{R}_3=\text{H}$ ), and the transformation of the tetraol monomethyl ether ( $\text{XI}_b$ ) ( $\text{R}_3=\text{H}$ ) to the known diol lactone ( $\text{XII}$ ) in the presence of a platinum catalyst through selective oxidation by molecular oxygen with simultaneous demethylation. The reactions of various aluminum reagents ( $\text{IV}_c$   $\text{IV}_e$ ) with  $\text{V}(\text{R}_3=\text{H})$  were studied. Attempted demethylations of  $\text{VI}_b$  ( $\text{R}_3=\text{C}_6\text{H}_5\text{CO}-$ ) with  $\text{BF}_3 \cdot (\text{C}_2\text{H}_5)_2\text{O}$  at  $-78^\circ$  and with boron trifluoride etherate-acetic anhydride at  $-18^\circ$  did not give the expected results.

8650

CSO: 4009

CHEMISTRY BULLETIN

AUTHOR: None

ORG: Marsh Gas Research Group, Department of Chemistry, Peking Normal University

TITLE: "Influence of Inoculation and pH on Marsh Gas Fermentation"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese  
No 6, 23 Nov 76 pp 6-10

ABSTRACT: This article reports a research on the influence of inoculation and pH on marsh gas fermentation. It was found that: 1) inoculation with 10-30% of old marsh gas fermentation liquor will accelerate both the fermentation process and the speed of methane production, while the results will be more prominent if fresh fermentation preparations is also added; and 2) the optimal pH for the acid producing fermentation stage is 7.5, and that for the marsh gas producing stage is 6.8-7.5. It is suggested that air oxidation is an effective and economical technique for raising the pH prior to the peak of fermentation.

AUTHOR: None

ORG: Lanchow Institute of Chemistry and Physics, Chinese Academy of Sciences

TITLE: "Solar Desalination of Saline Water"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese  
No 6, 23 Nov 76 pp 10, 18

ABSTRACT: This article introduces the construction and performance of a newly developed solar energy saline water distiller to supply fresh drinking water from April to September in the five alpine, dry and salty ground water northwestern provinces in China. The distiller is 2 square meters in dimension, south facing, consisted of glass ceiling, water pool, water collector, and pipes, and is able to produce 2 kilograms of water per day in good weather. The concentrated saline water is discharged after 3-5 days of distillation.

AUTHOR: None

ORG: Polypeptide Hormone Research Group, Shanghai Institute of Biochemistry, Chinese Academy of Sciences

TITLE: "Solid Phase Synthesis of Hypochalamic Luteinizing Hormone Releasing Hormone (LRH) and Its Analogues and Its Application as a Parturifacient for Domestic Fishes"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese No 6, 23 Nov 76 pp 11-12

ABSTRACT: This article reports a solid phase synthesis of hypochalamic luteinizing hormone releasing hormone (LRH), and its analogue [DALa<sup>6</sup>][deGly<sup>10</sup>NH<sub>2</sub>]LRH ethylamide from the potassium salt preparation of Boc aminoacid resin's solid phase peptides, and their applications as a fish parturifacient. Following an establishment that the analogue [DALa<sup>6</sup>][deGly<sup>10</sup>NH<sub>2</sub>]LRH ethylamide is 70% effective as a parturifacient to many species of domestic fishes, 9 other analogues of artificially synthetic LRH are also found to have similar effect.

AUTHOR: None

ORG: Gel Chromatograph Research Group, Institute of Chemistry, Chinese Academy of Sciences

TITLE: "A Gel Permeation Chromatograph (SN-01) for Polymer Molecular Weight Distribution Measurement"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese No 6, 23 Nov 76 pp 12-14

ABSTRACT: This article introduces the construction, components, performance, characteristics and specifications of a Chinese self-developed gel permeation chromatograph for the measurement of high polymer molecular weight distribution for application in petroleum chemical industries. After its successful development in 1975, the instrument is now being produced at the Tientsin Pei-hai Instrument Plant. A separation medium of sintered silicon gel with 6 different specifications for the gel chromatograph has also been developed, and is being produced at the Second Tientsin Chemical Reagent Plant.

This paper was received for publication on 4 June 1976.

AUTHOR: None

ORG: Peking Institute of Chemical Engineering and Metallurgy, Chinese Academy of Sciences

TITLE: "Bench Scale Experiment on Titanium White by Plasma"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese No 6, 23 Nov 76 pp 14-15

ABSTRACT: This article reports successful development of the plasma technique for the preparation of titanium white in China from 1974 to 1975. For the generation of high frequency plasma, a 0.3 megacycle high frequency furnace used in metallurgical heat treatment was converted into a high frequency plasma generator. Following successful laboratory experiments, extended larger scale experiment has further perfected the technique to attain a 95-98% yield of titanium white of granularity less than 0.4 micron, while reducing the excess oxygen coefficient to under 1.1 degree per kilogram. The paint properties and technical indexes of the product have proved to be superior to those produced by the sulfuric acid process in China.

AUTHOR: None

ORG: Paint Research Section, Shanghai Institute of Silicates, Chinese Academy of Sciences

TITLE: "No 202 Oxidation-resistant Paint for Heat Treatment of Metals"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese No 6, 23 Nov 76 pp 15-18

ABSTRACT: This article reports the development of the No 202 heat treatment protective paint to prevent loss of carbon and oxidation from carbon steel and certain carbon-containing alloy steel surfaces during the heat treatment process. The paint, composed of 80-85% silicate filler and 10-15% potassium silicate binding agent, has a working temperature range of 800-1200°C, a protection time of a few to more than 10 hours, and will automatically exfoliate when the metal is cooling. The technique of application and the properties of the paint are described.

AUTHOR: None

ORG: Inorganic Chemistry Research Group, Department of Chemistry, Sun Yet-sen University, and Canton Chromium Salt Plant

TITLE: "Comprehensive Utilization of Chromium Slag -- Production of Grey Bricks"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese No 6, 23 Nov 76 pp 10-21

ABSTRACT: This article reports the development of a process to first convert the poisonous hexavalent chromium in chromium slag into insoluble trivalent chromates, and then calcined with clay to produce grey bricks. The process involves essentially reduction of 40 mesh, 40% slag with ferrous sulfate or water gas in an oxygen-deficient atmosphere, and then calcined with clay at 1100°C. The kiln will take 50 tons of slag, and produce 40,000 grey bricks in a single operation. It is admitted that the time of calcining and cooling is too long.

This paper was received for publication on 19 July 1976.

AUTHORS: YANG Ti-lun [2799 4574 0243]  
WEI T'ao [7614 3447]

ORG: Both of Department of Chemistry, Lanchow University

TITLE: "Colorimetric Determination of Trace Hydrogen Cyanide in Air"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese No 6, 23 Nov 76 pp 22-25

ABSTRACT: The authors report a modification of the bromine water and pyridine-barbituric acid colorimetric determination of trace hydrogen cyanide in air, with the omission of the usual addition of a reducing agent to cope with residual bromine interference. The modification still retains a sensitivity of 0.43-86 microgram of hydrogen cyanide, and a precision of about 6% when the hydrogen cyanide level in air is 51.5 ppm. The method can also be applied to the fluorophotometric determination of trace propylene cyanide in air with satisfaction.

This paper was received for publication on 10 September 1976.

AUTHOR: LIU Ch'i-t'ao [0491 4359 0243]

ORG: Department of Chemistry, Liao-ning University

TITLE: "The Bond-Parameter Scale of the Hardness-softness of Acids and Bases"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese  
No 6, 23 Nov 76 pp 26-32

ABSTRACT: The author reports a study on a generalized classification of acids and bases on the basis of two principal chemical bond parameters, namely the charge number; radius ratio and the electronegativity. After plotting the two parameters from available data of 106 simple ionic acids and some simple ionic bases, equations of the boundary lines of acids and bases are derived, whereby a bond parameter scale of the hardness-softness of acids and bases are finally established. The results so calculated coincide with those of Pearson, Klopman and Ch'en Nien-i [7115 1819 6318], although the calculations are simpler. More complicated ionic acids and bases still remain to be explained and studied.

AUTHOR: CH' IEN Jen-yuan [6929 0086 0337]

ORG: Institute of Chemistry, Chinese Academy of Sciences

TITLE: "Organic Metals"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese  
No 6, 23 Nov 76 pp 33-41

ABSTRACT: The author discusses some recent research on organic metals concerned with: 1) the conductivity of molecular organic metallic crystals, and the modern attempts to raise their conductivity; 2) the characteristics of one-dimensional organic metallic conductors' anisotropy; 3) the electronic donor-receptor charge transfer TCNQ compounds; 4) the problems in the design and synthesis of one-dimensional organic metals; and 5) the prospect of synthesizing high temperature organic metallic superconductors.

AUTHOR: None

ORG: Chemical Grouts Research Group, Kwangtung Institute of Chemistry

TITLE: "Polymer Grouts and Their Application in Engineering"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese  
No 6, 23 Nov 76 pp 42-45

ABSTRACT: This article introduces the composition, characteristics and applications of epoxy resin, acrylate, acrylamide, lignin, polyaminoester and acrylic salt grout materials that were successfully developed by the Chemical Grouts Research Group of the Kwangtung Institute of Chemistry during the last decade, the techniques of their application, as well as 14 examples of their applications in various engineering works.

This paper was received for publication on 13 Sep 1976.

AUTHOR: None

ORG: Inorganic Chemistry Section, Department of Chemistry, Nanking University

TITLE: "Electronic Theory of Soft-hardness of Acids and Bases (II)"

SOURCE: Peking HUA-HSUEH T'UNG-PAO [CHEMISTRY BULLETIN] in Chinese  
No 6, 23 Nov 76 pp 45-56

ABSTRACT: Concluding a previous section of the article on the electronic theory of soft-hardness of acids and bases, this section of the article deals with the classification of soft-hardness of acids and bases, the principle of soft-hardness of acids and bases and its application, the scales of acids and bases according to soft-hardness, and the basic theory of the soft-hardness properties of acids and bases. It is concluded that despite its qualitative applications and many exceptions, its simple representations, theoretical support, and factual connections, deserve further understanding, utilization and improvement.

11,206

CSO: 4009/85

GEOGRAPHICAL KNOWLEDGE

AUTHOR: None

ORG: Regional Geography Group, Department of Geography, Shensi Normal University

TITLE: "Yen-an, the Hallowed Ground of Revolution"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 10,  
Oct 76 pp 2-5,9

ABSTRACT: Yen-an is in the center of the loessic plateau of North Shensi, which has been cut up by many stream valleys. The land is now composed of many small, round or long and narrow loess hills, with a relative elevation of 60-150m, and about 1,000-1,300m above sea level; while rock mountains are distributed to the north and the south of the city. The old city was completely destroyed by the Japanese. The new city built since the liberation now encompasses 3,556 km<sup>2</sup> and a population of two hundred twenty thousand. It is the center of a highway network to Hsi-an Pao-t'ou, T'ai-yuan, and Yin-ch'uan and commercial airlines link it directly with Peking. The railway linking it with Hsi-an is being completed. Since the completion of the aqueduct, more than 1,200 mu are now fertile fields. The rich local resources of coal, iron, petroleum, and wool are being developed by the more than 100 factories. The value of industrial products in 1975 was 6 times that of 1965. A map of the municipality of Yen-an is included in the paper on page 3.

AUTHOR: LU Yun [6424 0061]

ORG: None

TITLE: "Highways Lead to Edges of Clouds: Development of China's Highway Construction"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 10,  
Oct 76 pp 6-9

ABSTRACT: Beginning with the first highway in China, constructed in 1913 from Ch'ang-sha to Hisang-t'an of Hunan Province, to the year of the revolution in 1949, only 130,000 km was completed and only half of those were passable. Following two decades of struggle, in 1975 the highway mileage has increased more than 10 fold, while the mileage of asphalt surfaced roads was nearly 300 fold. With Peking as the center, a highway network is designed and being constructed to link the capital with the border regions of Tibet, Fukien Province, Yunnan Province, Sinkiang, Inner Mongolia, etc. as well as the vast interior provinces, cities, and towns. This paper reviews briefly accomplishments of highway construction in the various regions and is illustrated by a highway map of the mountain region of Ch'in-ling in the southern part of Shensi, in particular. A photo depicting a convoy of trucks on a highway in Tibet is also included.



AUTHOR: None

ORG: Propaganda Department, Chinese Communist Party Yu-chiang-hsien Committee

TITLE: "Spring Breeze on the Willows of Yu-chiang"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 10,  
Oct 76 pp 13-14

ABSTRACT: In 1958, Chairman Mao wrote a poem to celebrate the elimination of schistosomiasis in Yu-chiang-hsien, a region of fertile lands in the northeastern part of Kiangsi Province. In the century before the revolution, the three surrounding mountains caused the Pai-t'a-ho to flood the more than 60,000 mu of fields constantly and epidemics of this disease caused by snails gradually destroyed 42 villages on the banks of the river. There were not enough people to till the land and a third of it lay waste; the weeds grew taller than people. Since the liberation, dams, reservoirs, hydroelectric stations were built; the sick were cured of the disease free of charge; and snails were exterminated to stop the epidemic forever. Today, more than 95% of the 320,000 mu of cultivated land is effectively irrigated, and the unit yield of grain has been increased from 195 chin/mu to 904 chin/mu. Progress in forestry, animal husbandry, auxiliary industries, and fishery has put Yu-chiang-hsien among the advanced regions of the national agriculture-learning-from-Tachai movement. A map, depicting the various water conservancy structures of the region is included.

AUTHOR: KANG Tung-liang [6921 2767 2733]

ORG: None

TITLE: "Prosperity in Shuang-liu Deer Farm"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 10,  
Oct 76 pp 15-16

ABSTRACT: In August 1966, WEI Fa-ts'un [7614 3127 1317] started the deer farm by rounding up 31 wild spotted deer from Hsing-k'ai-hu Lake. The farm now has a herd of 1111 deer of three different species as well as hybrids. The workers are mostly educated youths coming from the cities. At first, the foreign technique of artificially feeding 3-day old fawns was adopted to tame the wild herd. The labor was heavy, the cost high, the survival rate low, and the production and quality of the deer velvet of the bucks inferior. A technique was therefore created using residue bean cake to entice the deer to produce a conditioned reflex. Gradually, noise from children, tractors, and horns was also used in the training process. Now, after a domestication course of 36 days, a deer herd can be grazed in the wild and will come back on command. Aside from deer velvet which is the raw material for the costly drug pantocrinum, every part of deer is usable and high-priced. Three sets of antlers can exchange for a truck of 10 ton capacity! The farm also has plants to process the various deer products efficiently. The author visited the farm located in the eastern party of Heilungkiang Province and wrote the paper to describe what he saw.

AUTHOR: None

ORG: None

TITLE: "New Harbor of Ta-lien, A Modernized Deep Harbor for Oil Tankers, Completed"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 10,  
Oct 76 p 17

ABSTRACT: The construction of the new harbor of Ta'lien [in Liaoning Province on the Yellow Sea] began in Nov 1974 and completed in the middle of 1976, 8 months ahead of schedule. It is, currently, the largest and deepest harbor in China. A long oil tanker wharf, measuring 1,400m, stretches out into the open sea. On it there are two spaces capable of mooring 50,000 to 100,000 ton tankers. Radio-controlled automatic loading and unloading equipment is a marvel of modernization, capable of accommodating a wharf with 14 large tugboats as well as other boats simultaneously. There are new lighthouses and other signal towers to guide the boats in and out of the swift currents and small islands. The large waste water treatment basin has a capacity of 30,000 m<sup>3</sup>. Highways, electric power stations, and telegraphic installations are also being quickly completed.

AUTHOR: None

ORG: None

TITLE: "Ch'ang-ch'un First Automobile Manufacturing Plant Succeeded in the Trial Manufacturing of a Sixty-ton Capacity Automatic-loading Truck for Mining Use"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 10,  
Oct 76 p 17

ABSTRACT: The workers and the staff of Ch'ang-ch'un First Automobile Plant succeeded in manufacturing the Chieh-fang-p'ai 60-ton automatic-unloading truck. It is designed specially for the use of mining industries. In its experimental runs, it transported more than 1 million tons of ores through high mountains, steep slopes, and snow and ice covered roads without much difficulty. No date is given regarding its production schedule. A photo of the truck is included.

AUTHOR: None

ORG: None

TITLE: "Nen-lin Railway is Triumphantly in Operation"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 10,  
Oct 76 p 17

ABSTRACT: The region of Ta-hsing-an-ling is densely distributed with forests and rich mineral resources as well. For 8 months of the year the ground is frozen and the ice on the rivers is several ch'ih in thickness. Parts of the region are permafrost, while there are also low swamps unpassable for men or horses. When the Japanese occupied the Northeast Provinces, four attempts were made to develop this region and failed every time. After the liberation, two attempts were made and failed due to the interference of Liu Shao-ch'i counter-revolutionary revisionism. In 1964, Chairman Mao led the central party to call for the development of this region. The forestry and railway workers answered the call and worked heroically under the extreme cold temperature of 40-50 below zero to build the Nen-lin Railway which was completed in half of the time of the original schedule. A photo is included, depicting a train carrying logs. No dates are given concerning the construction schedule of the railway and there is also no mention of the actual location of the railway.

AUTHOR: None

ORG: None

TITLE: "Fukien Wei-ni-lun [a Polypropylene Fiber ?] Established and in Production"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 10,  
Oct 76 p 18

ABSTRACT: A modernized chemical fiber plant, the Fukien Wei-ni-lun Plant, designed by the authors themselves, using equipment manufactured by themselves, and installed by themselves has been basically completed and is in experimental production. The working class people [the authors] spent only a short period of 4 years, in Fukien, a province with a weak industrial foundation, have succeeded in building a combined enterprise starting from the production of calcium carbide to the production of the short-fiber Wei-ni-lun. The plant is located at the foot of Yen-shan Mountains in Yung-an-hsien, by the Chiu-lung-ch'i River. The major raw material of Wei-ni-lun is limestone, which the local mountains have in abundance. The An-sha Hydroelectrical Power Station nearby supplies the plant with sufficient power. This plant has a capacity of producing 10,000 tons of Wei-ni-lun, the equivalent of 10,000 tons cotton products. It is indeed very significant for supplying the needed clothing of the people and for saving land to produce grains. A photo of the plant is included.

AUTHOR: None

ORG: None

TITLE: "Wu-chiang River Hui-lung Bridge Triumphantly Completed and Open for Traffic"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 10, Oct 76 p 18

ABSTRACT: Hui-lung Bridge is a part of the major highway from Mei-t'an to Huang-p'ing of Kweichow Province. It is located at the strategic Hui-lung Ferry where the red army had to cross the Wu-chiang River during their long march. The newly completed bridge is 168.4 m in length, 8.5 m in width, 62.5 m in height, with a major span of 105 m, being the highway arch bridge with the greatest span in Kweichow Province. Its completion has an economic significance in promoting industrial and agricultural production and an important political significance of strengthening the preparation for war. A photo of the bridge is included.

AUTHOR: KUO Hsiao-p'ing [6751 1420 1627]  
MA Jen-li [7456 0088 4409]

ORG: None

TITLE: "Fo-lung [Tie-the-dragon] Dike"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 10, Oct 76 p 32

ABSTRACT: Kan-ch'a-tzu Commune is located in Sun-k'o-hsien, on the bank of Hei-lung-chiang River. It was there where the battle was fought by CHIN Hsun-hua [6855 6064 5478] who was the model for all revolutionary youths. This is a commune organized by educated youths on a stretch of 30 km of river with numerous islands. The river terrace has thick black soil very suitable for cropping. The terrain is very low, however. In the summer of 1972, Hei-lung-chiang rose twice and flooded half of the 60,000 mu of cultivated land. Hei-lung certainly deserves the name of Black Dragon, creating at least a flood a year and a disaster every 3 years. The 4,000 educated young members decided in 1974 to tame the dragon with a dike. It is now completed, measuring 70 li in length and 3 m in width at the top, forming a reservoir of a capacity of more than 10 million m<sup>3</sup>, in which more than 10 million fish can be raised, and more than 60,000 mu of land ready to be cultivated. Fruit trees and willows are planted on the dike and an irrigation network is being planted for the future. At the crucial moment of the construction, 240 educated youths came from Shanghai, Cheng-chou, etc. to fight the decisive battle against the dragon in the dead winter when the water level was the lowest and won.

GEOGRAPHICAL KNOWLEDGE

AUTHOR: LI Hsi-en [2621 6932 1869]  
HSIA Ch'uan-sheng [1115 2164 3932]

ORG: None

TITLE: "Tien-ts'ang-shan [7820 5547 1472] Mountain and Erh-hai [3167 3189] Lake"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 11,  
Nov 76 pp 8-11, inside front cover

ABSTRACT: Ta-li [1129 3810] Pai Nationality Autonomous Chou is the home of 80% of the Pai people, located in the western part of the Yunnan-Kweichow Plateau, below the 19 peaks of the soaring Tien-ts'ang-shan, and by the fresh water lake of Erh-hai. In the eve of the twentyth anniversary of the establishment of the autonomous chou, the authors paid a visit to this land of beauty and reported its progresses. Photos on the inside front cover depict a corner of Hsia-kuan Municipality, the capital of the autonomous chou, the traditional March Festival of the Pai people, artifacts made of local marble, night view of one of the hydro-electrical power stations, terraced fields at the foot of the mountains, and the famous fresh water Erh-hai. A map of the chou is given on p 9.

AUTHOR: T'AN Tso-shun [6223 0155 7311]

ORG: None

TITLE: "Red Sun Shines On Hsin-kang [2450 3263] Forever"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 11,  
Nov 76 pp 12-13

ABSTRACT: Hsin-kang is an important component of the port city of Tientsin, on the Pohai Bay and the northern bank of Hai-ho, 50 km from Tientsin and 170 km from Peking; therefore, geographically, it is the gate of the provinces of North and Northwest China. In the 25 years since the visit of Chairman Mao in 1952, a three-stage construction has made it a modern deep harbor, capable of mooring 13 ships of over 10,000 tons each, with all accessory structures, including 72.5 km of railroad and 2 stations. This paper reviews the growth of the harbor in the past quarter of a century, with two photos comparing the scenes of the harbor before the cultural revolution and the present.

AUTHOR: None

ORG: Survey and Designing Academy, the Ninth Bureau of Engineering, Department of Water Conservancy and Electrical Power

TITLE: "On the Mao-t'iao-ho [3728 6426 3109] River"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 11, Nov 76 pp 14-16

ABSTRACT: Mao-t'iao-ho is the river to the west of Kuei-yang Municipality of Kweichow Province. A legend claims that there was a natural bridge in its lower reach which collapsed later to dump a large quantity of rocks into the river to raise the bed 40m higher, and to cause the water to be extremely swift. A page of the history of the long march was written here. This paper describes the geographical location of the river and reviews the water conservancy project of harnessing it in six terraced grades, beginning in October 1958 and completing in July 1974. Today, there are 2 reservoirs, 5 medium-sized hydroelectric power stations, and one large power station. Photos depicting geologists surveying a limestone cave, a dam of one of the power stations, a water supply station of a certain chemical fertilizer plant on one of the reservoirs are included in the paper.

AUTHOR: MEI Fang-ch'uan [2734 2455 5425]

ORG: None

TITLE: "China's Cotton"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 11, Nov 76 pp 17-19

ABSTRACT: Although silk and flax clothed the people of ancient China, in the border regions, such as Kuangtung, Kuangsi, and Yunnan, planting and utilizing cotton was recorded as early as the first century A.D. In the Yangtzu valley cotton culture began in the 13th century and by the 16th century it had spread throughout the Huang-ho valley as well. Cotton production declined in the 19th century, to 10.56 million tan in 1919. It was further reduced to 8.89 in 1949. Since that year, cotton production have grown by leaps and bounds. This paper divides cotton production in China into 5 geographical regions, the Huang-ho Valley, the Yangtzu Valley, the early-ripening cotton region of the North, the inland cotton region of the Northwest, and South China Cotton region to describe the natural environment of each region, the different varieties of cotton each produces, the cotton cropping system, and the unit yield. The current cotton production in all of China is not given, however.

AUTHOR: HSIUNG Huo [3574 3499]

ORG: None

TITLE: "Conversation About Glaciers"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 11,  
Nov 76 pp 28-29

ABSTRACT: This paper explains the climatic origin of glaciers and the distinction between modern glaciers and the glacials of prehistoric ages. Glacial deposits, talwegs, outwash gravels, and fluvioglacial drifts are described. Evidences of Quaternary glaciation in Kiangsi, Hupei, Chekiang, Yunnan, etc. are pointed out. Due to the fact that glaciers are powerful forces capable of modifying the terrain as well as reflecting geographical and climatic changes, the author suggests that studies on modern and ancient glaciers should greatly benefit scientific research and socialist construction in China.

AUTHOR: IAN Chih-ch'un [6351 1807 5028]

ORG: None

TITLE: "Animal Anomalies and Earthquake"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 11,  
Nov 76 pp 30-31

ABSTRACT: Although the natural calamity of earthquake cannot yet be controlled, a great deal of facts point out the principles of earthquake will someday be mastered by men. In China, the earthquakes of Hai-ch'eng [3189 1004] of South Liaoning on 2 Feb 75, Lung-ling to Lu-hsi [7893 7117] [3406 6007] of Yunnan, and Sung-pan to P'ing-wu [2646 3382] [1627 2976] of Szechwan this year were successfully forecasted. The technique of forecasting earthquake remains in need of being further perfected, however. This paper describes the abnormal reactions of 80 plus species of animals just before an earthquake. Of these, the more accurate sources for forecasting include the 20 plus kinds of dogs, chickens, rodents, fish, birds, cats, and pigs. Through accumulation of feelings and heredity, the sense organs and nerve systems possess a special ability to sense minute changes in the environment. The abnormal behaviors of the animals are perhaps reactions to certain physical or chemical changes, including changes of the electromagnetic field. Earthquake forecasting should be based upon comprehensive analyses of data including abnormal behaviors of animals observed by the masses.

GEOGRAPHICAL KNOWLEDGE

AUTHOR: None

ORG: Department of Geography, Hsi-nan Normal College

TITLE: "Mountain City of Chungching"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 12,  
Dec 76 pp 4-6, 13

ABSTRACT: Chungching is the largest industrial city of China's Southwest, one of the oldest cities of the nation. It has had a history of 3,000 years, although after repeated changes, the name of Chungching was acquired in the year 1189. Following a review of the importance of the city during the last stage of WW II where the agreement between Kuomintang and the Communists was signed, the paper provides a brief description of the heavy and light industries of Chungching today. A map of this city of 4 hsien, 9 districts, with an area of 9,800 km<sup>2</sup> and a population of 5,940,000 is included.

AUTHOR: None

ORG: Department of Geography, Lan-chou University

TITLE: "Liu-p'an-shan Mountains [0362 4149 1472]"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 12,  
Dec 76 pp 11-13, back cover

ABSTRACT: Liu-p'an-shan is also called Lung-shan [7150], a narrow and long mountain range, coming from the southern part of Ninghsia Hui Nationality Autonomous Region to stretch cross the narrowest part of Kansu to enter Shensi, ending at the northern bank of Wei-ho, measuring 240 km. This was the last critical stop of the red army in the long march. Following a geographical and geological description of the region, the paper speaks briefly of the progress made by the one million mountain inhabitants of Han and Hui nationalities since the liberation, and declares their support for Chairman Huang Kuo-feng. The back cover of this issue of the magazine is a photo of terraced fields being constructed under the Liu-p'an-shan Mountains.



AUTHOR: None

ORG: Information Group, San-tu [0005 6757] Shui [3055] Nationality Autonomous Hsien Revolutionary Committee

TITLE: "The Beautiful San-tu Shui Nationality Autonomous Hsien"

SOURCE: Peking TI-LI CHIH-SHIH [GEOGRAPHICAL KNOWLEDGE] in Chinese No 12, Dec 76 pp 14-16

ABSTRACT: It has been 20 years since the San-tu Shui Nationality Autonomous Hsien was established in the southern part of Kweichow Province, in the upper reaches of Tu-liu-chiang [6757 2692 3068], with an area close to 2,400 km<sup>2</sup>. From the northwest, the terrain slants toward the southeast, with a highest elevation of 1,562 m and a lowest of 320 m. High mountain peaks and streams crisscross the entire region. There are 37 people's communes, one township, and a population of 200 thousand. About 60% of the inhabitants belong to the Shui Nationality. They speak their own language at home but write in the Han characters. Aside from a map of the hsien, the paper also includes a photo depicting the seat of the township and another photo depicting logs being delivered through the river to support socialist construction of the state.

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